

CLAIMS

What is claimed is:

- 1 1. A method for processing an input signal for application to an amplifier to generate an amplified
2 output signal, the method comprising:
3 generating a measure characterizing previous power of the input signal;
4 generating a measure characterizing current power of the input signal;
5 generating a combined index value from the current and previous power measures;
6 applying the combined index value to one or more look-up tables (LUTs) to retrieve one or more pre-
7 distortion parameters;
8 applying the one or more pre-distortion parameters to the input signal to generate a pre-distorted
9 input signal for application to the amplifier.
- 1 2. The invention of claim 1, further comprising amplifying the pre-distorted input signal using the
2 amplifier to generate the amplified output signal.
- 1 3. The invention of claim 1, wherein:
2 the current power measure is a measure of instantaneous envelope power of the input signal; and
3 the previous power measure is the measure of the instantaneous envelope power of the input signal
4 from a previous processing cycle.
- 1 4. The invention of claim 1, wherein the combined index value corresponds to a concatenation of
2 the current and previous power measures.
- 1 5. The invention of claim 4, wherein each LUT maps all possible combinations of the current and
2 previous power measures.
- 1 6. The invention of claim 1, wherein the combined index value corresponds to a concatenation of
2 the current power measure and a difference between the current and previous power measures.
- 1 7. The invention of claim 6, wherein each LUT maps all possible combinations of the current power
2 measure and the power measure difference.
- 1 8. The invention of claim 1, wherein each LUT is stored in a RAM where the combined index value
2 is applied to each RAM to retrieve one of the one or more pre-distortion parameters.

1 9. The invention of claim 1, wherein the one or more LUTs comprises a composite I LUT and a
2 composite Q LUT.

1 10. The invention of claim 9, wherein the pre-distorted input signal is generated by applying the
2 input signal and I and Q pre-distortion parameters retrieved from the composite I and Q LUTs to a vector
3 modulator.

1 11. An apparatus for processing an input signal for application to an amplifier to generate an
2 amplified output signal, the apparatus comprising:
3 a power detector adapted to generate a measure characterizing power of the input signal;
4 one or more look-up tables (LUTs) adapted to provide one or more pre-distortion parameters,
5 wherein each LUT is adapted to receive a combined index value generated based on a current input
6 signal power measure and a previous input signal power measure; and
7 a modulator adapted to apply the one or more pre-distortion parameters to the input signal to generate
8 a pre-distorted input signal for application to the amplifier.

1 12. The invention of claim 11, further comprising the amplifier adapted to amplify the pre-distorted
2 input signal to generate the amplified output signal.

1 13. The invention of claim 11, wherein the power detector is adapted to measure instantaneous
2 envelope power of the input signal.

3 14. The invention of claim 13, further comprising an analog-to-digital converter (ADC) adapted to
4 convert an analog power measure from the power detector into a digital power measure.

5 15. The invention of claim 14, wherein the ADC is adapted to output a current digital power measure
6 and a previous digital power measure at every operating cycle.

1 16. The invention of claim 11, wherein the combined index value corresponds to a concatenation of
2 the current and previous power measures.

1 17. The invention of claim 16, wherein each LUT maps all possible combinations of the current and
2 previous power measures.

1 18. The invention of claim 11, wherein the combined index value corresponds to a concatenation of
2 the current power measure and a difference between the current and previous power measures.

1 19. The invention of claim 18, wherein each LUT maps all possible combinations of the current
2 power measure and the power measure difference.

1 20. The invention of claim 11, wherein each LUT is stored in a RAM where the combined index
2 value is applied to each RAM to retrieve one of the one or more pre-distortion parameters.

1 21. The invention of claim 11, wherein the one or more LUTs comprises a composite I LUT and a
2 composite Q LUT.

1 22. The invention of claim 21, wherein the modulator is a vector modulator adapted to apply I and Q
2 pre-distortion parameters retrieved from the composite I and Q LUTs to the input signal to generate the
3 pre-distorted input signal.

1 23. The invention of claim 11, wherein:
2 the power detector is adapted to measure instantaneous envelope power of the input signal;
3 further comprising an analog-to-digital converter (ADC) adapted to convert an analog power measure
4 from the power detector into a digital power measure, wherein the ADC is adapted to output a current
5 digital power measure and a previous digital power measure at every operating cycle;
6 the combined index value corresponds to a concatenation of the current and previous power
7 measures;
8 each LUT maps all possible combinations of the current and previous power measures;
9 each LUT is stored in a RAM where the combined index value is applied to each RAM to retrieve
10 one of the one or more pre-distortion parameters;
11 the one or more LUTs comprises a composite I LUT and a composite Q LUT; and
12 the modulator is a vector modulator adapted to apply I and Q pre-distortion parameters retrieved from
13 the composite I and Q LUTs to the input signal to generate the pre-distorted input signal.

1 24. The invention of claim 23, further comprising the amplifier adapted to amplify the pre-distorted
2 input signal to generate the amplified output signal.